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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/373,272	08/12/1999	SANDRA AUSTIN-PHILLIPS	09820.114	2404

7590

04/16/2003

INTELLECTUAL PROPERTY DEPARTMENT
DEWITT ROSS & STEVENS SC
FIRSTAR FINANCIAL CENTRE
8000 EXCELSIOR DRIVE SUITE 401
MADISON, WI 537171914

EXAMINER

EPPS, JANET L

ART UNIT

PAPER NUMBER

1635

DATE MAILED: 04/16/2003

14

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/373,272

Applicant(s)

AUSTIN-PHILLIPS ET AL.

Examiner

Janet L. Epps-Ford, Ph.D.

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-- Th MAILING DATE of this communication app ars on th cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 March 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 27, 28 and 31-40 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 27, 28 and 31-40 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

1. Applicant's request for reconsideration of the finality of the rejection of the last Office action is persuasive and, therefore, the finality of that action is withdrawn.
2. Applicant's arguments with respect to claims 27-28 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 27, and 31-35 are rejected under 35 U.S.C. 102(e) as being anticipated by Lebel et al.

The instant claims are drawn to genetically recombinant tobacco or alfalfa plant which is stably transformed to contain and express a gene sequence which encodes T. fusca cellulase E2, a method for producing cellulose degrading enzymes, further comprising concentrating the cellulose degrading enzyme, and a method of ensilement comprising ensiling said genetically recombinant tobacco or alfalfa plant.

Lebel et al. describe transgenic plants that express cellulolytic enzymes. The cellulase genes are fused to promoters active in plants and transformed into the nuclear genome and the chloroplast genome. According to Lebel et al., the transgenic plants address the need for a plentiful, and inexpensive source of cellulose-degrading enzymes for such industries as the fuel

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ethanol production industry, cattle feed industry, and the paper and textile industries by replacing the conventional industrial cellulases produced by fungi with cellulases produced in plants. Additionally, Lebel et al. teach that cellulases produced by transgenic plants could provide a more inexpensive and environmentally safe method for producing biomass than conventional methods (page 5, paragraph [0059]). The chemically inducible constructs used to transform plants with cellulase genes, can be used to transform into any suitable plant, including (*inter alia*) alfalfa and tobacco, see page 5, paragraph [0061].

In addition, the cellulose-degrading enzymes of Lebel et al. include cellulases, cellobiohydrolases, cellobioses and other enzymes involved in breaking down cellulose and hemicellulose into simple sugars such as glucose and xylose. Preferably, the cellulose-degrading enzymes used in the present invention are of non-plant origin, e.g., of microbial origin, preferably of bacterial origin, for example from a bacterium of the genus *Thermomonospora*, e.g., from *T. fusca* (see page 4, paragraph [0050]). Furthermore, preferred cellulase genes to be transformed into plants according to the present invention include, (*inter alia*) *T. fusca* E1, E2, and E5. However, other cellulase genes may be transformed into plants according to the Lebel et al. invention as well, see page 5, paragraph [0063].

Lebel et al. teach each and every aspect of the instant invention thereby anticipating Applicant's claimed invention.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 27-28, and 31-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lebel et al. in view of Zhang et al.

The discussion of Lebel et al. as set forth above is incorporated here. However, Lebel et al. does not teach genetically recombinant plants expressing cellulase E3 isolated from *T. fusca*, or methods of using said plants.

Zhang et al. disclose the E3 cellulase isolated from *T. fusca*. Zhang et al. report the cloning, sequencing (see DNA sequence in Figure 2, page 3391) and expression of the E3 gene from *T. fusca*, as well as the characterization of the E3 protein and its catalytic domain.

It would have been obvious to one of ordinary skill in the art at the time of filing to modify the teachings of Lebel et al. with the E3 cellulase disclosed in Zhang et al. to make genetically modified tobacco and alfalfa plants expressing the E3 cellulase enzyme isolated from *T. fusca*. One of ordinary skill in the art would have been motivated to make this modification since it is evident that invention of Lebel et al. is clearly amenable to the use of other functionally equivalent cellulase enzymes since Lebel et al. states "other cellulase genes may be transformed into plants according to the present invention," see page 5, paragraph [0063]. It would have been obvious to one of ordinary skill in the art at the time of filing to have substituted one functionally equivalent cellulase enzyme disclosed in the prior art for one of the

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cellulase enzymes disclosed in Lebel et al., since cellulase enzymes are disclosed in the prior art to be useful for the same purpose, i.e. for degrading cellulose.

Therefore, the invention as whole would have been *prima facie* obvious over Lebel et al. in view of Zhang et al.

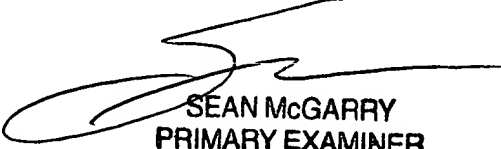
7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Janet L. Epps-Ford, Ph.D. whose telephone number is 703-308-8883. The examiner can normally be reached on M-T, Thurs-Friday 9:00AM to 7:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John LeGuyader can be reached on (703)-308-0447. The fax phone numbers for the organization where this application or proceeding is assigned are 703-305-3014 for regular communications and 703-746-5143 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0196.

Janet L. Epps-Ford, Ph.D.
Examiner
Art Unit 1635

JLE
April 15, 2003


SEAN McGARRY
PRIMARY EXAMINER
1635